

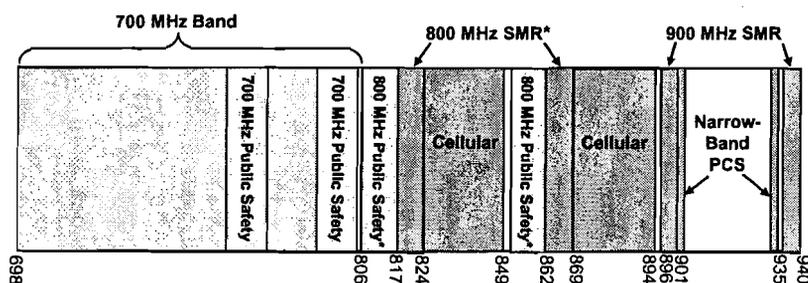
6. Significant progress has been made reconfiguring licensees to the new 800 MHz band plan in non-border regions of the country. In addition, the Public Safety and Homeland Security Bureau released an order, on May 9, 2008, establishing a reconfigured 800 MHz band plan for U.S. licensees along the U.S. – Canada border.<sup>17</sup> Furthermore, the Commission, in conjunction with the State Department, is continuing to discuss a modified 800 MHz band plan with Mexico for U.S. licensees operating along the U.S.-Mexico border.

#### D. 700 MHz Band

7. The 698-806 MHz band (the “700 MHz band”) was reclaimed from use by broadcast services in connection with the transition of the analog television service to digital television (DTV).<sup>18</sup> The Digital Television Transition and Public Safety Act of 2005 (DTV Act)<sup>19</sup> set a deadline of February 17, 2009 for the 700 MHz band spectrum to be cleared of analog transmissions and made available for public safety and commercial services as part of the DTV transition. This deadline subsequently was extended to June 12, 2009.<sup>20</sup> This spectrum is being made available for wireless services, including public safety and commercial services.<sup>21</sup>

8. The DTV Act also established two specific statutory deadlines for the auction of licenses for recovered spectrum in the 700 MHz band: (1) the auction was required to begin no later than January 28, 2008; and (2) the auction proceeds were required to be deposited in the Digital Television Transition and Public Safety Fund by June 30, 2008.<sup>22</sup> The Commission met both of these statutory deadlines.

#### 698-940 MHz: 700 MHz Band Spectrum



9. Prior to holding the auction, the Commission revisited the rules governing the 700 MHz band in light of the DTV Act, recent developments in the market for commercial wireless communications, and the evolving needs of the public safety community for advanced broadband communications.<sup>23</sup> Specifically, in the *700 MHz Second Report and Order*, the Commission adopted a

<sup>17</sup> See generally *Improving Public Safety Communications in the 800 MHz Band; New 800 MHz Band Plan for U.S. – Canada Border Regions*, *Second Report and Order*, 23 FCC Rcd 7605 (2008).

<sup>18</sup> See *700 MHz Second R&O*, 22 FCC Rcd at 15291, ¶ 1.

<sup>19</sup> Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4 (2006) (DRA). Title III of the DRA is the DTV Act.

<sup>20</sup> DTV Delay Act, S. 328, 111<sup>th</sup> Cong. (2009), amending 47 U.S.C. §§ 309, 337(3)(1).

<sup>21</sup> See *700 MHz Second R&O*, 22 FCC Rcd at 15291, ¶ 1 & 15295-96, ¶ 14.

<sup>22</sup> See DRA. Congress also extended the Commission’s auction authority to September 30, 2011. DTV Act § 3003(b).

<sup>23</sup> See *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands; Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; and Section 68.4(a) of the Commission’s Rules Governing Hearing Aid-Compatible Telephones*, *Notice of Proposed Rule Making, Fourth Further Notice of Proposed Rule Making, and Second Further Notice of Proposed Rule Making*, 21 FCC Rcd 9345 (2006).

new band plan and revised certain of the service rules relating to both the commercial and public safety spectrum in the 700 MHz band.<sup>24</sup> The new band plan provided a balanced mix of geographic service area licenses and spectrum blocks sizes for the commercial spectrum to be auctioned.<sup>25</sup> Among other service rules, the Commission provided that licensees for one of the commercial blocks of spectrum in the 700 MHz band, the Upper 700 MHz C Block would be subject to an “Open Platform” condition.<sup>26</sup> Accordingly, licensees must “allow customers, device manufacturers, third-party application developers, and others to use or develop the devices and applications of their choosing in C Block networks, so long as they meet all applicable regulatory requirements and comply with reasonable conditions related to management of the wireless network (*i.e.*, do not cause harm to the network).”<sup>27</sup> In addition, C Block licensees “may not block, degrade, or interfere with the ability of end users to download and utilize applications of their choosing on the licensee’s C Block network, subject to reasonable network management.”<sup>28</sup> The Commission also took two steps to promote the rapid construction and deployment of a nationwide, interoperable broadband public safety network. First, in the public safety spectrum, the band plan established a spectrum block designated for broadband communications, the public safety broadband spectrum, and provided that the spectrum would be licensed on a nationwide basis to a non-profit entity (the Public Safety Broadband Licensee) representative of the public safety community in accordance with a specific selection process.<sup>29</sup> Second, the Commission established a block in the commercial spectrum, the Upper 700 MHz D Block (D Block), to be licensed on a nationwide basis to a single entity, and required the winning bidder for the D Block to enter into a public/private partnership with the Public Safety Broadband Licensee to enable the construction of a nationwide network operating over the spectrum associated with both licenses and providing broadband services to both commercial and public safety users.<sup>30</sup>

10. The auction of the 700 MHz Band licenses, designated Auction 73, closed on March 18, 2008.<sup>31</sup> The auction concluded with provisionally winning bids covering 1091 licenses. While the bids for licenses associated with four of the five Upper 700 MHz Band blocks (the A, B, C, and E Blocks) exceeded the applicable reserve prices, bids for the fifth block (the D Block) license did not meet the reserve price and thus, there was no winning bid in Auction 73 for that license. Accordingly, the Auction 73 winning bids totaled \$19,120,378,000 and the net winning bids (reflecting bidders’ claimed bidding credit eligibility) totaled \$18,957,582,150.<sup>32</sup>

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<sup>24</sup> See *700 MHz Second R&O*, 22 FCC Rcd at 15291-95, ¶¶ 1-13; Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, *Report and Order and Further Notice of Proposed Rulemaking*, 22 FCC Rcd 8064 (2007) (*700 MHz Report and Order*).

<sup>25</sup> The Commission changed the location of existing 700 MHz Guard Band licenses, provided for a 1-megahertz shift of the other commercial blocks in the Upper 700 MHz band and in the spectrum allocated to public safety, and reduced the size of the Guard Band B Block to make two additional megahertz of commercial spectrum available for auction. *700 MHz Second Report and Order*, 22 FCC Rcd at 15292-93, ¶ 3. In addition, the Commission afforded all Guard Band A Block licensees the same technical rules that apply to the adjacent commercial spectrum and the ability to deploy cellular architectures. *Id.* at 15294, ¶ 9.

<sup>26</sup> See *700 MHz Second R&O*, 22 FCC Rcd at 15361, ¶ 195.

<sup>27</sup> See *id.* at 15360, ¶ 206.

<sup>28</sup> *Id.*

<sup>29</sup> See Service Rules for the 698-746, 747-762 and 777-792 Bands; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, *Second Further Notice of Proposed Rulemaking*, 23 FCC Rcd 8047, 8052 ¶ 8 (2008) (*700 MHz Second Further Notice*).

<sup>30</sup> See *700 MHz Second Report and Order*, 22 FCC Rcd at 15295, ¶ 13.

<sup>31</sup> FCC, *Auction 73*, <http://wireless.fcc.gov/auctions/73> (visited Sept. 18, 2008).

<sup>32</sup> “Auction of 700 MHz Band Licenses Closes,” *Public Notice*, 23 FCC Rcd 4572, 4572-73 ¶ 2 (2008).

11. The total 84 megahertz of commercial spectrum in the 700 MHz band will generally be available for a broad range of flexible uses.<sup>33</sup> This spectrum has many permissible uses: new licensees may use the spectrum for fixed, mobile (including mobile wireless commercial services), and broadcast services.<sup>34</sup> In addition, the Commission optimized the power rules in the remaining paired spectrum specifically for mobile use.<sup>35</sup> The Commission expects that many of the new technologies to be developed and deployed in this band will support advanced wireless applications.<sup>36</sup>

12. Because the auction of the D Block did not result in a winning bid, on May 14, 2008, the Commission issued the *700 MHz Second Further Notice*, revisiting the rules governing the D Block licensee, the mandatory public/private partnership, and the Public Safety Broadband Licensee.<sup>37</sup> The Commission sought comment broadly on how it might modify those rules to achieve the goal of a nationwide, interoperable public safety network, whether it should continue to mandate a public/private partnership between the D Block licensee and Public Safety Broadband Licensee, and if so, under what terms and conditions.<sup>38</sup>

13. On September 25, 2008, the Commission adopted the *700 MHz Third Further Notice* that proposed licensing the D Block spectrum as part of a revised 700 MHz Public/Private Partnership, with modifications to the rules governing both the D Block and the Public Safety Broadband Licensee, in order to maximize the public safety and commercial benefits of a nationwide, interoperable broadband network in the 700 MHz band.<sup>39</sup> Although the D Block proceeding still is pending, in its recent National Broadband Plan report to Congress, the Commission contended that the D Block should be auctioned for commercial use with limited technical requirements that would ensure technical compatibility between the D Block and the adjacent public safety broadband spectrum block. The Commission also contended that the commercial D Block should enable, but not obligate, the licensee to enter into a spectrum-sharing partnership with the neighboring Public Safety Broadband Licensee.<sup>40</sup>

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<sup>33</sup> See *Lower 700 MHz Report and Order*; Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, *Third Report and Order*, 16 FCC Rcd 2703 (2001); Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, *Second Memorandum Opinion and Order*, 16 FCC Rcd 1239 (2001); Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, *Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd 20845 (2000); Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, *Second Report and Order*, 15 FCC Rcd 5299 (2000) (*Upper 700 MHz Second Report and Order*); *700 MHz Second R&O*; *700 MHz Report and Order*. The 82 megahertz of spectrum does not include the reconfigured Guard Band B Block spectrum at 775-776/805-806 MHz. See *700 MHz Second R&O*, 22 FCC Rcd at 15294 ¶ 9, 15388-89 ¶¶ 266-69.

<sup>34</sup> See generally *id.* In addition, in February 2010, the Commission sought comment on a petition for rulemaking requesting that the Commission require that all mobile units for the 700 MHz band be capable of operating over all frequencies in the band. "Wireless Telecommunications Bureau Seeks Comment on Petition for Rulemaking Regarding 700 MHz Band Mobile Equipment Design and Procurement Practices," RM-11592, *Public Notice*, 25 FCC Rcd 1464 (WTB 2010).

<sup>35</sup> See *700 MHz Report and Order*, 22 FCC Rcd at 8067-68, ¶ 6.

<sup>36</sup> See, e.g., *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1032, ¶ 20.

<sup>37</sup> See *700 MHz Second Further Notice*, 23 FCC Rcd at 8047..

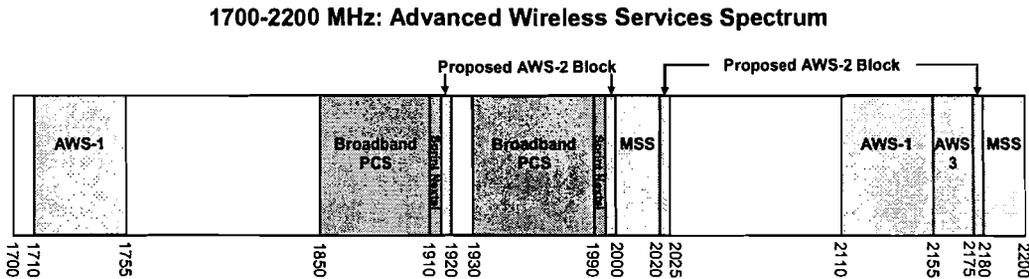
<sup>38</sup> *Id.* The Commission also indicated that, prior to adopting final rules, it would present for public comment a detailed proposal regarding specific proposed rules to address these issues. *Id.* at 8052, ¶ 7.

<sup>39</sup> See generally Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229, *Third Further Notice of Proposed Rulemaking*, 23 FCC Rcd 14301 (2008).

<sup>40</sup> See *National Broadband Plan*, at 86, 315-316.

### E. 1710 – 2180: Advanced Wireless Services

14. To further the goal of promoting the deployment of advanced services, the Commission has made efforts to allocate and license additional spectrum suitable for offering AWS.<sup>41</sup> As noted in the *Eleventh Report*, in 2002 the Commission, together with the National Telecommunications and Information Administration (“NTIA”), allocated 90 megahertz of spectrum in the 1710-1755 MHz and 2110-2155 MHz (“AWS-1”) bands that can be used to offer advanced wireless services, including 3G services.<sup>42</sup>



15. Subsequently, the Commission completed the process of establishing service rules for the 1710-1755 MHz and 2110-2155 MHz bands. This included the spectrum could be used for any wireless service that is consistent with the spectrum’s fixed and mobile allocations and would be licensed under the Commission’s flexible, market-oriented Part 27 rules,<sup>43</sup> and also a band plan that provided for a significant amount of the spectrum to be licensed on a small geographic basis to encourage the participation of small and rural providers in the AWS auction.<sup>44</sup>

16. The Commission held Auction 66 in 2006.<sup>45</sup> Of the 1,122 licenses offered, 104 winning bidders won 1,087 licenses, with net bids of more than \$13.7 billion,<sup>46</sup> and all 1,087 licenses were awarded in 2007. In August 2008 the Commission’s Auction 78 included the 35 AWS-1 licenses for which no winning bids were submitted in Auction 66.<sup>47</sup> Winning bids were submitted for all 35 AWS-1 licenses, with net winning bids for those licenses of \$13,372,850.<sup>48</sup> As of early March 2010, the Commission has granted licenses to 9 out of 14 AWS applicants.

17. The Commission also has taken significant steps toward licensing other bands of

<sup>41</sup> 47 C.F.R. § 24.3. Advanced Wireless Services (AWS) is the collective term we use for new and innovative fixed and mobile terrestrial wireless applications using bandwidth that is sufficient for the provision of a variety of applications, including those using voice and data (such as Internet browsing, message services, and full-motion video) content.

<sup>42</sup> *Eleventh Report*, 21 FCC Rcd at 10977, ¶ 73. The Commercial Spectrum Enhancement Act, signed into law on December 23, 2004, establishes a Spectrum Relocation Fund to reimburse federal agencies operating on certain frequencies that have been reallocated to non-federal use, including the 1710-1755 MHz band, for the cost of relocating their operations. See Commercial Spectrum Enhancement Act, Pub. L. No. 108-494, 118 Stat. 3986, Title II (2004).

<sup>43</sup> *Eleventh Report*, 21 FCC Rcd at 10977-10978, ¶ 74; 47 C.F.R. Part 27.

<sup>44</sup> *Eleventh Report*, 21 FCC Rcd at 10978, ¶ 74.

<sup>45</sup> See “Auction of Advanced Wireless Services Closes: Winning Bidders Announced for Auction 66,” Report AUC-06-66-F, *Public Notice*, 21 FCC Rcd 10521 (2006).

<sup>46</sup> *Id.*

<sup>47</sup> See “Auction of AWS-1 and Broadband PCS Licenses Rescheduled for August 13, 2008,” *Public Notice*, 23 FCC Rcd 7496 (2008).

<sup>48</sup> See “Auction of AWS-1 and Broadband PCS Licenses Closes,” *Public Notice*, 23 FCC Rcd 12749 (2008).

spectrum for use by AWS. In 2004, the Commission allocated an additional twenty megahertz of spectrum in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz bands (“AWS-2”).<sup>49</sup> The Commission additionally released the *AWS-2 Service Rules NPRM*, which sought comment on appropriate service rules for the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz bands, and also offered some tentative conclusions consistent with existing AWS service rules, such as allowing flexible use of this spectrum and licensing this spectrum under Part 27 of the Commission’s rules.

18. In 2005, the Commission designated yet another 20 MHz of spectrum for AWS, specifically the 2155-2175 MHz band (“AWS-3”), thus establishing 70 MHz of contiguous AWS spectrum in the 2.1 GHz band (from 2110 to 2180 MHz).<sup>50</sup> On September 19, 2007, the Commission released a Notice of Proposed Rulemaking (NPRM), seeking comment on service rules for the AWS-3 spectrum.<sup>51</sup> On June 20, 2008, the Commission released a Further Notice of Proposed Rulemaking (FNPRM), seeking comment on the Commission’s proposed AWS-3 rules, which include adding 5 megahertz of spectrum (2175-80 MHz) to the proposed AWS-3 band (2155-75 MHz). The FNPRM proposes to require licensees of that spectrum to provide – using up to 25 percent of its wireless network capacity – free, two-way broadband Internet service at engineered data rates of at least 768 kbps downstream.<sup>52</sup> In October 2008, the Commission’s Office of Engineering and Technology released the *Advanced Wireless Service Interference Tests Results and Analysis*, which analyzed data from earlier laboratory bench tests performed by FCC staff together with interested parties.<sup>53</sup>

#### F. Broadband Radio Service

19. The Commission has transformed the 2496-2690 MHz band by providing licensees with greater flexibility and establishing a more functional band plan.<sup>54</sup>

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<sup>49</sup> Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, *Sixth Report and Order, Third Memorandum Opinion and Order and Fifth Memorandum Opinion and Order*, 19 FCC Rcd 20720 (2004); Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands; Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, *Notice of Proposed Rulemaking*, 19 FCC Rcd 19263 (2004).

<sup>50</sup> See Amendment of Part 2 of the Commissions Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, *Eighth Report and Order, Fifth Notice of Proposed Rule Making and Order*, 20 FCC Rcd 15866 (2005).

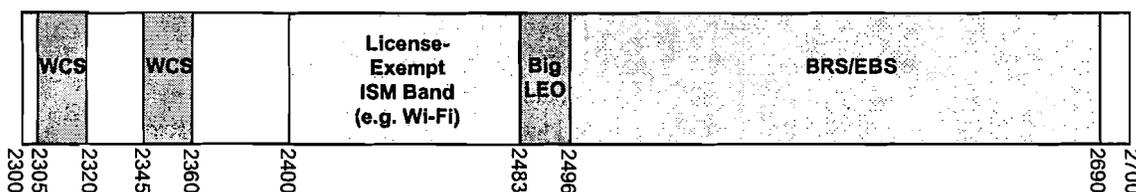
<sup>51</sup> Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, *Notice of Proposed Rulemaking*, 22 FCC Rcd 17035 (2007).

<sup>52</sup> Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band; and Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, *Further Notice of Proposed Rulemaking*, 23 FCC Rcd 9859 (2008).

<sup>53</sup> See *Advanced Wireless Service Interference Tests Results and Analysis*, October 10, 2008 (WT Docket Nos. 07-195 and 04-356). See also “The FCC’s Office of Engineering and Technology Releases Analysis of AWS-3 Interference Tests,” WT Docket Nos. 07-195 and 04-356, *Public Notice*, 23 FCC Rcd 14669 (OET 2008).

<sup>54</sup> Amendment of Parts 1, 21, 73, 74, and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational, and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *Report and Order and Further Notice of Proposed Rulemaking*, 19 FCC Rcd 14165 (2004). The rules for this band were initially established in 1963 but have evolved significantly since that time.

## 2300-2700 MHz: BRS/EBS Spectrum



The Commission has taken several steps to restructure the BRS/EBS band and facilitate more efficient use of the spectrum. First, the Commission created a new BRS/EBS band plan for the 2496-2690 MHz band that eliminated the use of interleaved channels and created distinct band segments for high power operations, such as one-way video transmission, and low power operations, such as two-way fixed and mobile broadband applications. By grouping high and low power users into separate portions of the band, the new band plan reduces the likelihood of interference caused by incompatible uses. The new band plan also creates incentives for the development of low-power, cellularized broadband operations, which were inhibited by the prior band plan.

20. In addition, the Commission provided licensees with the flexibility to employ the technologies of their choice in the band and to lease spectrum under the Commission's secondary market spectrum leasing policies and procedures. The Commission also implemented geographic area licensing for all licensees in the band, which will allow increased flexibility while reducing administrative burdens on both licensees and the Commission.

21. In April 2006, the Commission continued its transformation of the rules governing BRS and EBS by revising the mechanism for transition from the existing band configuration to the new band plan.<sup>55</sup> BRS and EBS licensees have largely completed the process of transitioning the 2.5 GHz band to the new band plan. As of March 8, 2010, the transition has been completed in 438 out of 493 BTAs.<sup>56</sup> In the remaining BTAs, virtually all other licensees are subject to a pending transition plan or have filed self-transition plans.

22. The Commission has continued to revise the rules relating to the 2.5 GHz band in 2008 and 2009 by clarifying its policies concerning leasing of EBS stations, setting forth auction rules for unassigned BRS spectrum, seeking further comment on how to license the available and unassigned "white spaces" in the EBS spectrum band, issuing a Declaratory Ruling clarifying the "splitting-the-football" methodology that licensees should use to divide overlapping geographic service areas for licenses that expired and are later reinstated, and proposing to give new BRS licensees four years from the date of initial license grant to demonstrate substantial service.<sup>57</sup> The Commission held Auction 86, the auction of available BRS licenses, in the fourth quarter of 2009.<sup>58</sup> Of the 78 licenses offered in Auction

<sup>55</sup> Amendment of Parts 1, 21, 73, 74, and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational, and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *Order on Reconsideration and Fifth Memorandum Opinion and Order and Third Memorandum Opinion and Order and Second Report and Order*, 21 FCC Rcd 5606 (2006).

<sup>56</sup> See WT Docket No. 06-136.

<sup>57</sup> Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *Third Order on Reconsideration and Sixth Memorandum Opinion and Order and Fourth Memorandum Opinion and Order and Second Further Notice of Proposed Rulemaking and Declaratory Ruling*, 23 FCC Rcd 5992 (2008); *Fifth Memorandum Opinion and Order and Third Further Notice of Proposed Rulemaking and Declaratory Ruling*, 24 FCC Rcd 12558 (2009).

<sup>58</sup> The auction started on October 27, 2009 and closed on October 30, 2009. See "Auction of Broadband Radio Service Licenses Closes; Winning Bidders Announced for Auction No. 86," *Public Notice*, 24 FCC Rcd 13572 (WTB 2009).

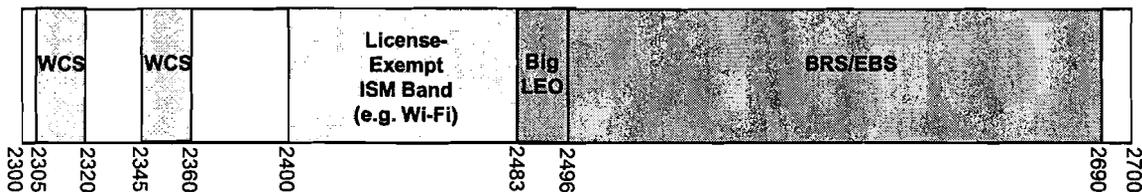
86, ten winning bidders won 61 licenses, with net bids of \$19,426,600.<sup>59</sup>

23. The changes made to the 2496-2690 MHz band, together with technological and business developments, is facilitating the development of a nationwide WiMAX network by Clearwire that has the potential to compete with cable and DSL broadband providers. The 2496-2690 MHz band can speed the arrival of a wireless broadband pipe that will increase competition and consumer choice, make possible new services, and promote the availability of broadband for all Americans. This band also can play an important role in extending broadband service to rural and underserved areas. Moreover, the changes to this band have enabled BRS/EBS providers to use this spectrum in a more technologically and economically efficient manner.

#### G. Wireless Communications Service (WCS)

24. The Commission has licensed 30 megahertz of spectrum in the 2.3 GHz band, at 2305-2320 MHz and 2345-2360 MHz, for the Wireless Communications Service (“WCS”). While the service rules governing WCS allow for both fixed and mobile applications, the technical limits imposed to protect adjacent Satellite Radio operations have not permitted the development of mobile equipment for the band, but these rules are the subject of a rulemaking proceeding before the Commission.

#### 2300-2700 MHz: WCS Spectrum



25. The WCS spectrum was auctioned in 1997 and licensed on a Major Economic Area (“MEA”) and Regional Economic Area Grouping (“REAG”) basis. The WCS spectrum is adjacent to and separated by the spectrum band for the Satellite Digital Audio Radio Service (“SDARS”), which is used by Sirius XM Radio Inc. to provide satellite radio service. On December 18, 2007, the Commission released a Notice of Proposed Rulemaking and Second Further Notice of Proposed Rulemaking seeking comment on appropriate rules and policies for licensing SDARS digital repeaters and considering changes to the technical rules governing WCS licenses.<sup>61</sup> In particular, the Commission sought to consider what changes may be necessary to facilitate the coexistence of SDARS and WCS licensees in such a way that will enable the continued provision of high-quality satellite radio service as well as the deployment of new broadband services to the public.

#### H. 1.4 GHz Bands

26. The Commission completed the auction of licenses in the paired 1392-1395 MHz and 1432-1435 MHz bands and in the unpaired 1390-1392 MHz band.<sup>60</sup> The paired spectrum was offered as two 3-megahertz blocks in the six REAGs.<sup>61</sup> The unpaired spectrum was auctioned as one 2-megahertz block in each MEA.<sup>62</sup> Like other spectrum bands under Part 27 of the Commission’s rules, the service rules for the 1.4 GHz band are flexible. In the auction, two winning bidders won a total of 64 licenses,

<sup>59</sup> *Id.*

<sup>60</sup> See “Auction of 1.4 GHz Band Licenses Closes,” *Public Notice*, 22 FCC Rcd 4714 (2007).

<sup>61</sup> See “Auction of 1.4 GHz Bands Licenses Scheduled for February 7, 2007,” *Public Notice*, 21 FCC Rcd 9494 (2006)

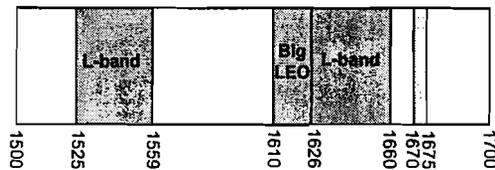
<sup>62</sup> *Id.*

raising a total of \$123,599,000.<sup>63</sup>

### I. 1670-1675 MHz

27. In April 2003, the FCC auctioned five megahertz of unpaired spectrum in the 1670-1675 MHz band as a single, nationwide license. As with the other spectrum bands licensed under Part 27 of the Commission's rules, such as AWS and WCS, the service rules for the 1670-1675 MHz band are flexible, and licensees can use the spectrum to deploy a variety of fixed or mobile wireless services. The license was won at auction by Crown Castle. In July 2007, Crown Castle entered into a long-term agreement to lease the spectrum to a wholly-owned subsidiary of TVCC Holding Company, LLC ("TVCC Holding").<sup>64</sup> In late 2008, control of TVCC Holding was transferred, so that 13.13 percent was held by a company wholly owned by Rajendra Singh and the Singh family; 11.86 percent by Columbia Capital IV, LLC, subsidiaries; and 75 percent by Harbinger-related entities.<sup>65</sup>

#### 1500-1700 MHz: 1670-1675 MHz Spectrum



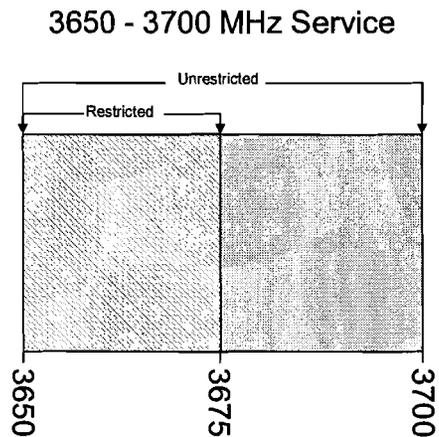
<sup>63</sup> See "Auction of 1.4 GHz Band Licenses Closes," *Public Notice*, 22 FCC Rcd 4714 (2007).

<sup>64</sup> Long-Term *De Facto* Transfer Lease Application, File No. 0003108073 (filed July 17, 2008). *Crown Castle Announces Long-Term Modeo Spectrum Lease*, Press Release, Crown Castle, July 23, 2007; ULS Lease ID L000002305.

<sup>65</sup> Transfer of Control of a Lessee Application, File No. 0003573463 (filed Sept. 10, 2008); TVCC Holding Company, LLC, Form 602, File No. 0003635816 (filed Nov. 3, 2008).

## J. 3650-3700 MHz

28. The Commission adopted service rules for the 3650 – 3700 MHz band in June 2007<sup>66</sup> and began accepting applications licenses in the service in November 2007.<sup>67</sup> Terrestrial operations in the band are licensed on a nationwide, non-exclusive basis, with all licensees registering their fixed and base stations in a common data base (ULS) prior to operation. Licensees are subject to restrictions on their operations in geographic areas occupied by grandfathered Fixed Satellite Service (FSS) and Federal Government stations. The rules also provide that terrestrial licensees have the mutual obligation to cooperate and avoid harmful interference to one another, and are required to use one of two types of “contention-based” technologies (restricted or unrestricted) that accommodate shared use of the band by multiple users. Equipment using “restricted” contention-based protocols (i.e., equipment capable of avoiding interference only to other devices using the same protocol) is allowed to operate only on the lower 25 megahertz portion of the band (3650 – 3675 MHz). Unrestricted equipment (i.e., equipment capable of avoiding interference to other devices, even those that use a different protocol) is allowed to operate within the entire 50 megahertz of the band. Mobile stations are required to positively receive and decode an enabling signal transmitted by a base station. Devices certified by the FCC as mobiles or portables do not require a separate license or registration.<sup>68</sup>



<sup>66</sup> See *Wireless Operations in the 3650-3700 MHz Band*, ET Docket No. 04-151, Rules for Wireless Broadband Services in the 3650-3700 MHz Band, WT Docket No. 05-96, *Report and Order*, 20 FCC Rcd 6502 (2005) (*3650 MHz Order*), *recon. granted in part, Memorandum Opinion and Order*, 22 FCC Rcd 10421 (2007).

<sup>67</sup> See “Wireless Telecommunications Bureau Announces Start State for Licensing and Registration Process for the 3650 – 3700 MHz Band,” *Public Notice*, 22 FCC Rcd 19802 (WTB 2007).

<sup>68</sup> See 47 C.F.R. § 90.1307. Mobile and portable stations that operate with a peak EIRP of 1 Watt/25 megahertz and receive and decode an enabling signal from a base station are not required to be registered even if used in a fixed mode. See *3650 MHz Order*, 20 FCC Rcd at 6513, ¶ 31, n.54; 47 C.F.R. § 90.1333.

## APPENDIX B

## Mobile Wireless Network Technologies

1. Cellular, PCS, and digital SMR networks use the same basic design. All use a series of low-power transmitters to serve relatively small areas (“cells”), and reuse spectrum to maximize efficiency.<sup>1</sup> In the past, cellular and SMR networks have used both analog and digital cellular technologies, while PCS and AWS networks were designed from the start to use a digital format. Digital technology provides better sound quality and increased spectral efficiency than analog technology. From a customer’s perspective, digital service in the cellular band or SMR bands is virtually identical to digital service in the PCS and AWS bands. After the sunset of analog cellular service in February 2008, only digital cellular technologies are used in the mobile wireless industry.

2. The two main digital technologies used in the United States are Code Division Multiple Access (“CDMA”) and Global System for Mobile Communications (GSM). In addition, there are two other, less-widely used (by subscribers), technologies: integrated Digital Enhanced Network (“iDEN”) and the once-common Time Division Multiple Access (TDMA). These four technologies are commonly referred to as Second Generation, or 2G, because they succeeded the first generation of analog cellular technology, Advanced Mobile Phone Systems (AMPS).<sup>2</sup> U.S. carriers have been phasing out TDMA service over the past several years.<sup>3</sup>

3. Beyond the 2G digital technologies, mobile telephone providers have been deploying next-generation, or 2.5G and 3G, network technologies<sup>4</sup> that allow them to offer mobile data services at higher data transfer speeds and, in some cases, to increase voice capacity.<sup>5</sup> For GSM/TDMA providers, the first step in the migration to next-generation network technologies is General Packet Radio Service (GPRS), a packet-based data-only network upgrade that allows for faster data rates by aggregating up to

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<sup>1</sup> PCS, digital SMR, and cellular networks are all “cellular” systems since all divide service regions into many small areas called “cells.” Cells can be as small as an individual building or as large as 20 miles across. Each cell serves as a base station for mobile users to obtain connection to the fixed network and is equipped with its own radio transmitters/receivers and associated antennas. Service regions are divided into cells so that individual radio frequencies may be reused in different cells (“frequency reuse”), in order to enhance frequency efficiency. When a person makes a call on a wireless phone, the connection is made to the nearest base station, which connects with the local wireline phone network or another wireless operator. When a person is using a wireless phone and approaches the boundary of one cell, the wireless network senses that the signal is becoming weak and automatically hands off the call to the base station in the next cell. See *Sixth Report*, 16 FCC Rcd at 13361, n.55.

<sup>2</sup> See *infra* note 307 for a discussion of the cellular analog requirement and its sunset.

<sup>3</sup> AT&T, for example, discontinued TDMA service on February 18, 2008, and on Mar. 1, 2008 TDMA service was discontinued on the former Dobson TDMA network. AT&T, *Answer Center*, <http://wireless.att.com/answer-center> (visited Sept. 19, 2008). Cincinnati Bell Wireless discontinued its TDMA service in June 2006. Cincinnati Bell, Inc., SEC Form 10-K, filed Mar. 1, 2007, at 5.

<sup>4</sup> For purposes of this *Report*, all of the network technologies beyond 2G that carriers have deployed, as well as those that they plan to deploy in the future, are generally referred to as “next-generation network technologies.” The International Telecommunication Union (ITU) has defined 3G network technologies as those that can offer maximum data transfer speeds of 2 Mbps from a fixed location, 384 kbps at pedestrian speeds, and 144 kbps at traveling speeds of 100 kilometers per hour. See *Fifth Report*, 15 FCC Rcd at 17695. There is ambiguity among other industry players, however, as to which network technologies constitute 3G and which constitute interim technologies, often labeled “2.5G.” See *Seventh Report*, 17 FCC Rcd at 12990 and 13038. Therefore, this *Report* uses a more general label to describe all of the technologies beyond 2G.

<sup>5</sup> See Section IV.B.1, Network Coverage and Technology Upgrades, *supra*.

eight 14.4 kbps channels.<sup>6</sup> Beyond GPRS, many U.S. GSM/TDMA providers deployed Enhanced Data Rates for GSM Evolution (EDGE) technology, which offers average data speeds of 100-130 kbps. Wideband CDMA (WCDMA, also known as Universal Mobile Telecommunications System, or UMTS) is the next migration step for GSM providers beyond EDGE and allows maximum data transfer speeds of up to 2 Mbps and average user speeds of 220-320 kbps.<sup>7</sup> Finally, deployment of WCDMA with HSPA (High Speed Packet Access, which includes both High Speed Downlink Packet Access, HSDPA, and High Speed Uplink Packet Access, HSUPA) technology allows average download speeds of 400-700 kbps with burst rates of up to several Mbps,<sup>8</sup> average upload speeds of 500-800 kbps, when HSUPA technology is deployed.<sup>9</sup> Some service providers have deployed, or announced plans to deploy, additional HSPA upgrades that allow for faster peak and average data transfer speeds, such as HSPA 7.2 Mbps and HSPA+, which allows a peak download speed of 21 Mbps.<sup>10</sup>

4. Many CDMA providers have upgraded their networks to CDMA2000 1xRTT (also referred to as CDMA2000 1X or 1xRTT), CDMA2000 EV-DO (evolution-data optimized, EV-DO) Revision 0, and EV-DO Revision A (Rev. A) technologies. 1xRTT doubles voice capacity and delivers peak data rates of 307 kbps in mobile environments and typical speeds of 40-70 kbps.<sup>11</sup> EV-DO allows maximum data throughput speeds of 2.4 Mbps, while EV-DO Rev. A increases maximum data throughput speeds to 3.1 Mbps.<sup>12</sup> Typical, user-experienced download speeds with EV-DO range from 400 to 800 kbps, while upload speeds average 50-70 kbps.<sup>13</sup> The EV-DO Rev. A network upgrade increases average download speeds to 600 kbps to 1.4 Mbps and significantly improves average upload speeds to 350-800 kbps.<sup>14</sup> Whereas WCDMA and WCDMA/HSDPA are incompatible with earlier technologies on the GSM migration path, the more advanced technologies on the CDMA migration path are backwards compatible.<sup>15</sup> Deployment of these various technologies by service providers is discussed above. Maps showing CDMA and GSM network coverage, as well as mobile broadband coverage, can be found in Appendix D.

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<sup>6</sup> See *Seventh Report*, 17 FCC Rcd at 12990. This upgrade is also labeled GSM/GPRS because many GSM/TDMA carriers are upgrading their TDMA markets with GSM and GPRS simultaneously.

<sup>7</sup> *Tenth Report*, 20 FCC Rcd at 15951, ¶ 111. Although WCDMA and WCDMA/HSPA are not backwards compatible with GPRS/EDGE, wireless modem cards that are compatible with both WCDMA/HSPA and GPRS/EDGE, and enable handoff between the two types of networks, are available for use with laptop computers. See, e.g., Novatel Wireless, *Products: Merlin U730 Wireless PC Modem Card*, available at [www.novatelwireless.com](http://www.novatelwireless.com) (visited Oct. 8, 2008).

<sup>8</sup> *Tenth Report*, 20 FCC Rcd at 15951, ¶ 111.

<sup>9</sup> *AT&T Nears Completion of 3G Wireless Technology Deployment that Delivers Broadband Wireless Speeds – For Downloads and Uploads*, Press Release, AT&T, May 21, 2008.

<sup>10</sup> See Section IV.B.1, Network Coverage and Technology Upgrades, *supra*.

<sup>11</sup> See *Seventh Report*, at 12990; *Ninth Report*, 19 FCC Rcd at 20650, ¶ 129.

<sup>12</sup> *Id.* See also, CDMA Development Group NOI Comments at 3-4.

<sup>13</sup> *Sprint Powers Up Faster Mobile Broadband Network in 10 More Markets, Upgraded Coverage Reaches 60 Million People*, News Release, Sprint Nextel, Dec. 12, 2006; 3G Americas, *3G Technologies*, available at [http://www.3gamericas.com/English/PDFs/3G\\_technology\\_comparison.pdf](http://www.3gamericas.com/English/PDFs/3G_technology_comparison.pdf) (visited Dec. 15, 2008), (*3G Technology Comparison*). The maximum peak download speed for EV-DO is 2.4 Mbps. *Id.*

<sup>14</sup> *America's Largest and Fastest Mobile Broadband Network Just Got Even Larger – Sprint Customers Can Do More, In More Places, And At Fast Speeds*, News Release, Sprint Nextel, June 19, 2007; *Verizon Wireless: 100 Percent of Wireless Broadband Network Now Enhanced with Faster Speeds*, News Release, Verizon Wireless, June 29, 2007. The maximum peak download speed for EV-DO Rev A is 3.1 Mbps. *3G Technology Comparison*.

<sup>15</sup> *Standards in Wireless Telephone Networks*, at 328.

5. Beyond WCDMA/HSDPA/HSUPA and EV-DO, there are two main competing technologies for next-generation wireless broadband networks: Long Term Evolution (LTE) and WiMAX. Both of these technologies, which are often referred to as fourth-generation (4G) technologies, are generally based on the Orthogonal Frequency Division Multiple Access (OFDMA) modulation technology.<sup>16</sup> LTE can support up to 58 Mbps for upper link transmission and 173 Mbps for downlink transmission with 20 MHz spectrum and a 2x2 Multiple Input Multiple Output (MIMO) antenna structure.<sup>17</sup> The Mobile WiMAX technology can support peak downlink data rates up to 63 Mbps and peak upper link data rates up to 28 Mbps in a 10 MHz channel.<sup>18</sup>

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<sup>16</sup> See *EDGE, HSPA and LTE—The Mobile Broadband Advantage*, Rysavy Research and 3G Americas, Sept. 2007, at 16, available at [http://www.3gamericas.com/pdfs/2007\\_Rysavy\\_091007.pdf](http://www.3gamericas.com/pdfs/2007_Rysavy_091007.pdf). Because OFDM allows signals to pass through buildings and trees, providers can use the technology to offer wireless broadband services without a direct line-of-sight between the transmitter and the end user's receiver. *Eleventh Report*, 21 FCC Rcd at 10995, ¶ 119.

<sup>17</sup> See *EDGE, HSPA and LTE—The Mobile Broadband Advantage*, Rysavy Research and 3G Americas, Sept. 2007, at 81, available at [http://www.3gamericas.com/pdfs/2007\\_Rysavy\\_091007.pdf](http://www.3gamericas.com/pdfs/2007_Rysavy_091007.pdf).

<sup>18</sup> See *Mobile WiMAX – Part I: A Technical Overview and Performance Evaluation*, Mobile WiMAX Forum, August 2006, at 10, available at [http://www.wimaxforum.org/documents/downloads/Mobile\\_WiMAX\\_Part1\\_Overview\\_and\\_Performance.pdf](http://www.wimaxforum.org/documents/downloads/Mobile_WiMAX_Part1_Overview_and_Performance.pdf).

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**Table C-1: CTIA's Semi-Annual Mobile Wireless Industry Survey**

Date	Estimated Total Subscribers	Year End over Year End Subscriber Increase	12-Month Total Service Revenues (in \$000s)	12-Month Roamer Services Revenues (in \$000s)	Cell Sites	Direct Service Provider Employees	Average Local Monthly Bill (Dec. Survey Periods)
1985	340,213	248,613	\$482,428	N/A	913	2,727	N/A
1986	681,825	341,612	\$823,052	N/A	1,531	4,334	N/A
1987	1,230,855	549,030	\$1,151,519	N/A	2,305	7,147	\$96.83
1988	2,069,441	838,586	\$1,959,548	N/A	3,209	11,400	\$98.02
1989	3,508,944	1,439,503	\$3,340,595	\$294,567	4,169	15,927	\$83.94
1990	5,283,055	1,774,111	\$4,548,820	\$456,010	5,616	21,382	\$80.90
1991	7,557,148	2,274,093	\$5,708,522	\$703,651	7,847	26,327	\$72.74
1992	11,032,753	3,475,605	\$7,822,726	\$973,871	10,307	34,348	\$68.68
1993	16,009,461	4,976,708	\$10,892,175	\$1,361,613	12,805	39,775	\$61.48
1994	24,134,421	8,124,960	\$14,229,922	\$1,830,782	17,920	53,902	\$56.21
1995	33,785,661	9,651,240	\$19,081,239	\$2,542,570	22,663	68,165	\$51.00
1996	44,042,992	10,257,331	\$23,634,971	\$2,780,935	30,045	84,161	\$47.70
1997	55,312,293	11,269,301	\$27,485,633	\$2,974,205	51,600	109,387	\$42.78
1998	69,209,321	13,897,028	\$33,133,175	\$3,500,469	65,887	134,754	\$39.43
1999	86,047,003	16,837,682	\$40,018,489	\$4,085,417	81,698	155,817	\$41.24
2000	109,478,031	23,431,028	\$52,466,020	\$3,882,981	104,288	184,449	\$45.27
2001	128,374,512	18,896,481	\$65,316,235	\$3,752,826	127,540	203,580	\$47.37
2002	140,766,842	12,392,330	\$76,508,187	\$3,895,512	139,338	192,410	\$48.40
2003	158,721,981	17,955,139	\$87,624,093	\$3,766,267	162,986	205,629	\$49.91
2004	182,140,362	23,418,381	\$102,121,210	\$4,210,331	175,725	226,016	\$50.64
2005	207,896,198	25,755,836	\$113,538,221	\$3,786,331	183,689	233,067	\$49.98
2006	233,040,781	25,144,583	\$125,456,825	\$3,494,294	195,613	253,793	\$50.56
2007	255,395,599	22,354,818	\$138,869,304	\$3,742,014	213,299	266,782	\$49.79
2008	270,333,881	14,938,282	\$148,084,170	\$3,739,274	242,130	268,528	\$50.07

Source: CTIA, *Background on CTIA's Semi-Annual Wireless Industry Survey*

<[http://files.ctia.org/pdf/CTIA\\_Survey\\_Year-End\\_2008\\_Graphics.pdf](http://files.ctia.org/pdf/CTIA_Survey_Year-End_2008_Graphics.pdf)> (Annualized Wireless Industry Survey Results – December 1985 To December 2008: Reflecting Domestic U.S. Commercially-Operational Cellular, ESMR and PCS Providers).

**Table C-2: FCC's Semi-Annual Local Telephone Competition Survey:  
Mobile Telephone Subscribership**

State	Jun 2008		Subscribers								
	Carriers <sup>1</sup>	Percent Resold <sup>2</sup>	2001	2002	2003	2004	2005	2006	2007		2008
			Jun	Dec	Jun						
Alabama	12	6 %	1,930,631	2,027,845	2,100,557	2,301,847	2,874,367	3,275,933	3,605,490	3,765,194	3,887,016
Alaska	7	11	218,424	242,133	*	307,323	340,507	397,429	431,653	459,703	480,069
American Samoa	*	*	0	0	0	*	*	*	*	*	*
Arizona	9	9	2,018,410	2,412,998	2,643,952	3,079,657	3,542,844	4,153,491	4,637,471	4,799,648	4,935,640
Arkansas	6	9	891,275	1,130,302	1,351,291	1,376,564	1,680,975	1,924,313	2,149,312	2,288,049	2,446,414
California	12	6	14,184,625	16,007,376	18,892,619	21,575,797	24,572,034	27,496,682	30,203,842	32,247,015	31,946,342
Colorado	9	10	1,983,405	2,247,166	2,426,929	2,727,910	3,040,589	3,428,381	3,756,215	3,967,902	4,065,993
Connecticut	4	6	1,418,367	1,577,873	1,791,944	2,064,204	2,328,966	2,582,367	2,786,594	2,883,780	2,958,633
Delaware	4	8	389,284	433,059	503,353	593,452	585,113	650,328	724,342	750,793	774,709
Dist. of Columbia	4	8	382,457	415,399	520,182	555,958	752,548	878,846	965,816	935,808	1,047,428
Florida	9	7	7,536,670	8,607,715	10,252,348	11,916,615	12,619,929	14,176,756	15,255,433	15,604,856	15,809,443
Georgia	10	5	4,076,119	4,300,831	4,709,288	5,332,517	6,001,411	6,865,466	7,598,387	7,940,514	8,142,364
Guam	*	*	*	*	*	*	*	*	*	*	*
Hawaii	4	4	543,283	640,247	732,262	819,262	934,405	1,010,341	1,066,608	1,096,181	1,115,274
Idaho	16	8	398,781	500,693	572,406	653,779	773,893	901,455	1,018,617	1,085,776	1,125,104
Illinois	10	7	5,621,044	5,409,370	6,834,217	7,529,966	8,227,185	9,147,657	9,949,126	10,330,274	10,633,730
Indiana	11	11	1,781,247	2,032,290	2,456,509	2,844,568	3,442,612	3,972,560	4,448,186	4,675,372	4,823,650
Iowa	61	9	861,382	1,157,580	1,250,305	1,445,711	1,633,697	1,867,015	2,058,022	2,165,772	2,244,649
Kansas	11	11	901,225	1,061,171	1,195,230	1,345,160	1,659,662	1,905,342	2,133,399	2,261,455	2,326,444
Kentucky	11	10	1,176,756	1,505,982	1,595,290	2,000,459	2,507,816	2,820,938	3,101,267	3,291,480	3,342,867
Louisiana	8	7	1,677,292	2,187,811	2,365,224	2,547,153	2,942,463	3,355,503	3,611,553	3,764,592	3,895,938
Maine	6	16	399,616	457,835	524,246	610,533	710,985	786,811	882,039	940,914	972,323
Maryland	5	7	2,446,818	2,684,441	3,108,086	3,575,747	3,967,969	4,470,542	4,818,275	5,023,573	5,124,208
Massachusetts	5	7	2,753,685	3,289,934	3,506,039	3,919,139	4,487,601	4,916,500	5,289,432	5,469,503	5,624,292
Michigan	11	8	4,071,091	4,758,338	4,889,269	5,430,637	6,229,949	6,862,582	7,333,242	7,608,420	7,820,609
Minnesota	8	10	2,014,317	2,254,895	2,564,783	2,823,079	3,132,453	3,542,865	3,833,826	4,048,413	4,164,322
Mississippi	10	7	993,781	1,106,700	1,232,750	1,411,277	1,631,331	1,923,365	2,069,897	2,196,392	2,252,244
Missouri	11	9	1,937,684	2,246,430	2,515,325	2,859,953	3,595,157	4,067,585	4,480,384	4,673,889	4,855,115
Montana	7	7	*	291,429	343,160	*	466,022	575,034	650,381	693,507	723,081
Nebraska	10	5	712,685	838,368	900,744	984,355	1,070,530	1,198,714	1,325,131	1,387,022	1,451,007
Nevada	9	8	766,581	895,586	1,077,380	1,319,684	1,604,713	1,883,273	2,092,872	2,166,680	2,249,231
New Hampshire	6	10	445,181	529,795	598,504	686,746	790,639	896,661	973,105	1,022,406	1,044,808
New Jersey	4	5	3,896,778	4,531,457	5,392,240	6,326,459	6,233,984	6,953,528	7,419,289	7,654,173	7,834,401
New Mexico	9	10	619,582	735,107	828,869	939,091	1,024,852	1,252,770	1,415,726	1,489,120	1,555,122
New York	8	8	6,749,096	7,915,526	8,829,070	9,939,759	12,995,534	14,573,548	15,901,378	16,395,371	17,259,751
North Carolina	11	8	3,377,331	4,610,120	4,305,521	4,875,916	5,503,202	6,209,483	6,961,656	7,305,964	7,427,570
North Dakota	7	6	*	*	*	*	367,850	456,806	492,101	513,238	541,042
Northern Mariana Isl.	*	*	*	*	*	*	*	*	*	*	*
Ohio	10	9	4,255,934	4,887,376	5,659,459	6,188,081	6,993,803	7,939,126	8,722,523	9,098,920	9,357,119
Oklahoma	15	8	1,200,234	1,366,475	1,574,588	1,724,505	2,001,835	2,317,197	2,571,878	2,722,901	2,807,607
Oregon	10	9	1,268,909	1,473,883	1,682,036	1,894,285	2,055,890	2,484,176	2,781,196	2,922,609	3,006,636
Pennsylvania	9	10	4,378,216	4,987,067	5,681,653	6,420,037	7,397,397	8,348,713	9,200,793	9,615,349	9,894,870
Puerto Rico	5	11	1,374,747	1,136,619	1,401,599	1,698,702	2,002,851	2,170,540	2,322,737	2,410,503	2,074,854
Rhode Island	4	8	401,805	463,636	527,366	615,398	689,209	765,355	828,969	848,249	873,565
South Carolina	12	8	1,502,345	1,830,516	2,041,541	2,337,367	2,606,827	3,000,861	3,339,733	3,500,297	3,572,588
South Dakota	8	6	*	292,210	344,825	382,906	433,927	513,850	569,513	596,470	610,945
Tennessee	10	7	2,251,208	2,660,068	2,800,735	3,171,487	4,065,964	4,730,704	4,970,756	5,245,513	5,790,638
Texas	25	6	8,294,338	9,650,715	10,776,234	12,091,134	14,424,253	16,927,880	18,792,225	19,677,302	20,389,774
Utah	11	8	833,492	970,854	1,094,563	1,229,029	1,413,756	1,649,265	1,874,345	1,970,501	2,045,870
Vermont	4	16	*	*	*	*	294,984	333,551	374,984	402,173	421,399
Virgin Islands	*	*	*	*	*	*	*	*	*	*	*
Virginia	8	8	3,059,420	3,429,450	3,879,582	4,392,319	4,851,206	5,325,173	6,148,261	6,415,881	6,242,155
Washington	12	10	2,493,214	2,849,043	3,102,750	3,567,896	4,062,372	4,494,964	5,034,888	5,292,298	5,460,640
West Virginia	9	16	452,036	549,722	579,983	713,657	820,838	964,649	1,095,035	1,172,699	1,235,610
Wisconsin	10	9	2,008,679	2,523,956	2,533,215	2,831,645	3,200,301	3,517,283	3,641,432	3,841,745	3,966,445
Wyoming	10	8	173,939	168,232	276,344	277,658	315,347	358,668	410,464	441,161	457,201
Nationwide	170	8 %	114,028,928	130,751,459	147,623,734	167,313,001	192,053,067	217,418,404	238,315,850	249,331,701	255,301,307

\* Data withheld to maintain firm confidentiality. Some data for December 2007 have been revised.

<sup>1</sup> For data through December 2004, only facilities-based wireless carriers with at least 10,000 mobile telephony subscribers per state were required to report data, and they were instructed to use billing addresses to determine subscriber counts by state. Starting with the June 2005 data, all facilities-based wireless carriers are required to report, and to use the area codes of telephone numbers provided to subscribers to determine subscriber counts by state.

<sup>2</sup> Percentage of mobile wireless subscribers receiving their service from a mobile wireless reseller.

Source: Local Telephone Competition: Status as of June 30, 2008, Federal Communications Commission, August 2009 (Table 14: Mobile Wireless Telephone Subscribers).

Table C-3: Economic Area Penetration Rates

EA	EA Name	Subscribers	2008 Estimated EA Population	2008 Penetration Rate	2008 HHI	2007 HHI	EA Density
57	Detroit-Ann Arbor-Flint, MI	7,279,508	6,949,314	105%	2971	2822	364.07
78	Birmingham, AL	1,750,967	1,661,353	105%	2542	2714	137.13
155	Farmington, NM-CO	224,144	213,552	105%	3877	3817	16.04
13	Washington-Baltimore, DC-MD-VA-WV-PA	9,567,739	9,215,733	104%	2731	2734	402.76
82	Biloxi-Gulfport-Pascagoula, MS	397,022	387,725	102%	2465	2255	143.45
83	New Orleans, LA-MS (see note 1)	1,602,718	1,576,305	102%	3247	3038	171.93
161	San Diego, CA	3,062,637	3,001,072	102%	2574	2605	660.48
87	Beaumont-Port Arthur, TX	451,330	446,851	101%	3037	3094	89.2
31	Miami-Fort Lauderdale, FL	6,060,744	6,114,085	99%	2250	2557	483.2
135	Odessa-Midland, TX	401,917	406,313	99%	3671	3512	10.13
85	Lafayette, LA	617,580	629,216	98%	4660	4436	99.99
122	Wichita, KS-OK	1,163,451	1,182,342	98%	2798	1967	20.49
10	New York-North New Jersey-Long Island, NY-NJ-CT-PA	25,840,149	26,646,432	97%	2640	2632	890.56
81	Pensacola, FL	668,261	686,522	97%	2657	2085	154.06
20	Norfolk-Virginia Beach-Newport News, VA-NC	1,748,338	1,818,132	96%	2775	2058	289.89
22	Fayetteville, NC	530,982	554,048	96%	2857	1988	164.57
90	Little Rock-North Little Rock, AR	1,615,294	1,689,753	96%	4210	4044	46.09
172	Honolulu, HI	1,239,506	1,288,198	96%	2365	2369	187.2
12	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD	7,186,730	7,570,454	95%	2614	2652	778.84
80	Mobile, AL	677,754	710,168	95%	3106	2801	74.75
97	Springfield, IL-MO	490,209	514,014	95%	3910	3800	58.2
131	Houston-Galveston-Brazoria, TX	6,378,099	6,691,432	95%	2279	2278	169.25
133	McAllen-Edinburg-Mission, TX	1,138,690	1,202,189	95%	3025	3803	221.96
141	Denver-Boulder-Greeley, CO-KS-NE	4,313,611	4,540,177	95%	2339	2326	52.02
170	Seattle-Tacoma-Bremerton, WA	4,344,695	4,566,164	95%	2615	2571	190.45
29	Jacksonville, FL-GA	2,036,509	2,156,622	94%	2381	2228	112.52
86	Lake Charles, LA	506,078	539,898	94%	3354	3154	52.41
132	Corpus Christi, TX	524,058	559,249	94%	2471	2850	46.47
15	Richmond-Petersburg, VA	1,475,224	1,593,807	93%	3206	2355	124.03
79	Montgomery, AL	457,762	494,455	93%	2531	1838	66.86
121	North Platte, NE-CO	55,308	59,249	93%	5577	6272	4.95
128	Abilene, TX	202,179	216,950	93%	3457	3371	20.35
143	Casper, WY-ID-UT	407,544	439,965	93%	5256	5031	5.17
160	Los Angeles-Riverside-Orange County, CA-AZ	18,348,656	19,635,950	93%	2488	2542	286.1
163	San Francisco-Oakland-San Jose, CA	8,886,433	9,606,859	93%	2610	2526	271.07
34	Tampa-St. Petersburg-Clearwater, FL	2,519,668	2,733,761	92%	2291	1801	890.99
37	Albany, GA	457,309	497,476	92%	3040	2228	62.74
40	Atlanta, GA-AL-NC	6,254,177	6,776,384	92%	2411	2342	246.04
42	Asheville, NC	447,936	488,874	92%	4132	3930	128.63
59	Green Bay, WI-MI	625,112	681,496	92%	2837	2708	34.15
93	Joplin, MO-KS-OK	255,563	277,263	92%	3584	3404	74.68
99	Kansas City, MO-KS	2,426,298	2,651,516	92%	2290	2237	88.73
127	Dallas-Fort Worth, TX-AR-OK	8,238,206	8,944,362	92%	2623	2479	119
3	Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH	7,477,030	8,182,770	91%	2800	2700	421.83

EA	EA Name	Subscribers	2008 Estimated EA Population	2008 Penetration Rate	2008 HHI	2007 HHI	EA Density
26	Charleston-North Charleston, SC	622,882	683,525	91%	2969	1961	149.8
28	Savannah, GA-SC	685,861	756,214	91%	2433	1795	91.95
30	Orlando, FL	4,044,360	4,435,636	91%	2486	2539	265.84
55	Cleveland-Akron, OH-PA	4,179,189	4,591,498	91%	3773	2641	427.84
70	Louisville, KY-IN	1,370,748	1,509,949	91%	2520	2534	180.92
71	Nashville, TN-KY	2,525,249	2,785,768	91%	2679	2699	105.12
84	Baton Rouge, LA-MS	738,091	807,491	91%	4999	4686	140.3
89	Monroe, LA	301,514	329,618	91%	4320	4271	56.12
136	Hobbs, NM-TX	178,509	196,227	91%	3073	3548	11.21
23	Charlotte-Gastonia-Rock Hill, NC-SC	2,214,894	2,473,299	90%	3059	2273	240.5
24	Columbia, SC	915,227	1,013,410	90%	3634	2235	125.95
25	Wilmington, NC-SC	916,535	1,018,797	90%	2760	1910	107.39
35	Tallahassee, FL-GA	710,634	786,450	90%	3084	2287	63.51
39	Columbus, GA-AL	463,777	515,179	90%	2888	2122	84.08
44	Knoxville, TN	978,794	1,091,091	90%	2816	2739	165.64
51	Columbus, OH	2,255,320	2,517,488	90%	3080	2839	190.4
64	Chicago-Gary-Kenosha, IL-IN-WI	9,758,562	10,863,175	90%	2140	2151	556.54
73	Memphis, TN-AR-MS-KY	1,758,238	1,959,370	90%	2709	2593	102.99
153	Las Vegas, NV-AZ-UT	2,090,698	2,311,014	90%	2297	2517	23.74
95	Jonesboro, AR-MO	273,192	305,662	89%	5032	4778	51.3
130	Austin-San Marcos, TX	1,578,703	1,765,864	89%	2640	2632	156.06
134	San Antonio, TX	2,250,096	2,518,581	89%	2220	2481	82.99
137	Lubbock, TX	343,283	387,146	89%	2832	2878	27.17
142	Scottsbluff, NE-WY	78,969	88,903	89%	6801	5666	7.81
41	Greenville-Spartanburg-Anderson, SC-NC	1,204,661	1,364,738	88%	4047	2792	183.62
50	Dayton-Springfield, OH	986,040	1,116,999	88%	2615	2590	318.52
69	Evansville-Henderson, IN-KY-IL	759,745	861,317	88%	4433	4340	75.31
124	Tulsa, OK-KS	1,275,769	1,451,768	88%	3222	3227	72.44
126	Western Oklahoma, OK	121,529	137,340	88%	3170	3110	12.04
19	Raleigh-Durham-Chapel Hill, NC	1,939,647	2,232,251	87%	2965	2141	188.38
53	Pittsburgh, PA-WV	2,510,463	2,891,964	87%	3157	3079	284.77
67	Indianapolis, IN-IL	2,838,314	3,264,138	87%	3033	2983	171.37
77	Jackson, MS-AL-LA	1,283,565	1,480,716	87%	3333	3225	49.67
88	Shreveport-Bossier City, LA-AR	507,029	580,798	87%	3810	3374	57.96
96	St. Louis, MO-IL	3,214,497	3,681,336	87%	2674	2708	127.01
107	Minneapolis-St. Paul, MN-WI-IA	4,179,353	4,824,484	87%	2588	2061	82.98
111	Minot, ND	91,788	105,574	87%	4304	4117	7
5	Albany-Schenectady-Troy, NY	1,037,835	1,202,416	86%	3352	3289	134.71
27	Augusta-Aiken, GA-SC	543,513	634,830	86%	3781	2203	89.79
32	Fort Myers-Cape Coral, FL	777,730	908,394	86%	2429	2515	234.27
36	Dothan, AL-FL-GA	301,007	349,130	86%	2536	2080	53.7
38	Macon, GA	705,680	818,370	86%	3662	2958	62.88
43	Chattanooga, TN-GA	674,119	784,456	86%	3494	3294	145.32
45	Johnson City-Kingsport-Bristol, TN-VA	515,676	598,600	86%	3936	2293	144.51
98	Columbia, MO	338,299	395,491	86%	4082	3843	58
103	Cedar Rapids, IA	360,877	420,766	86%	2561	2600	101.33
138	Amarillo, TX-NM	422,603	489,740	86%	2668	2644	11.79

EA	EA Name	Subscribers	2008 Estimated EA Population	2008 Penetration Rate	2008 HHI	2007 HHI	EA Density
167	Portland-Salem, OR-WA	2,842,754	3,286,569	86%	2469	2315	76.01
171	Anchorage, AK	587,874	686,293	86%	3927	3873	1.07
18	Greensboro-Winston-Salem-High Point, NC-VA	1,693,560	1,995,855	85%	2786	1985	189.09
101	Peoria-Pekin, IL	449,514	526,468	85%	3424	3366	90.99
125	Oklahoma City, OK	1,547,547	1,811,951	85%	3444	3486	65.04
154	Flagstaff, AZ-UT	408,492	478,450	85%	3833	2835	8.24
156	Albuquerque, NM-AZ	883,070	1,035,714	85%	2843	2103	20.89
164	Sacramento-Yolo, CA	2,278,601	2,680,240	85%	2621	2600	188.08
2	Portland, ME	657,097	782,854	84%	2812	2493	98.56
8	Buffalo-Niagara Falls, NY-PA	1,212,940	1,447,692	84%	3324	3222	212.89
11	Harrisburg-Lebanon-Carlisle, PA	1,013,427	1,208,890	84%	3235	3130	292.42
17	Roanoke, VA-NC-WV	720,763	857,872	84%	2439	1831	97.83
21	Greenville, NC	730,656	874,488	84%	2641	2235	87.74
56	Toledo, OH	1,076,840	1,275,362	84%	4566	3258	163.94
63	Milwaukee-Racine, WI	1,965,243	2,331,492	84%	2123	2200	366.88
75	Tupelo, MS-AL-TN	526,224	627,150	84%	5403	5275	49.76
102	Davenport-Moline-Rock Island, IA-IL	469,626	558,029	84%	2585	2548	108.27
151	Reno, NV-CA	643,698	768,870	84%	2556	2282	7.56
6	Syracuse, NY-PA	1,559,887	1,884,621	83%	4002	3884	104.74
33	Sarasota-Bradenton, FL	720,731	871,874	83%	2733	2074	273.56
49	Cincinnati-Hamilton, OH-KY-IN	1,935,674	2,337,216	83%	2247	2225	294.08
66	Fort Wayne, IN	613,053	741,382	83%	3038	3088	158.5
118	Omaha, NE-IA-MO	912,444	1,100,498	83%	3495	2128	62.4
120	Grand Island, NE	236,032	284,487	83%	6672	5989	11.56
157	El Paso, TX-NM	863,810	1,045,239	83%	2370	2050	33.04
158	Phoenix-Mesa, AZ-NM	3,664,125	4,440,500	83%	2683	2108	93.91
159	Tucson, AZ	985,051	1,183,947	83%	2622	2006	60.03
7	Rochester, NY-PA	1,214,616	1,478,494	82%	4389	4247	167.21
68	Champaign-Urbana, IL	513,173	629,200	82%	3378	3265	73.47
91	Fort Smith, AR-OK	286,419	347,505	82%	4121	4114	46.51
94	Springfield, MO	782,275	951,629	82%	3690	3514	48.14
108	Wausau, WI	401,743	489,282	82%	2477	2371	34.13
123	Topeka, KS	386,173	468,643	82%	2623	1850	35.62
169	Richland-Kennewick-Pasco, WA	624,145	759,564	82%	2723	2516	27.68
72	Paducah, KY-IL	186,310	229,282	81%	5938	5846	70.02
106	Rochester, MN-IA-WI	271,204	335,650	81%	3272	2799	55.65
139	Santa Fe, NM	221,840	272,281	81%	4568	2806	13.06
147	Spokane, WA-ID	742,292	914,396	81%	3338	3076	23.63
152	Salt Lake City-Ogden, UT-ID	2,060,297	2,533,880	81%	2265	2226	35.68
9	State College, PA	636,118	798,593	80%	4204	4238	92.41
60	Appleton-Oshkosh-Neenah, WI	368,450	458,449	80%	2618	1927	143.62
100	Des Moines, IA-IL-MO	1,378,065	1,727,108	80%	2982	2679	47.32
119	Lincoln, NE	324,131	403,030	80%	4909	4251	50.24
140	Pueblo, CO-NM	231,849	291,066	80%	2986	2646	8.71
150	Boise City, ID-OR	572,748	711,937	80%	2856	2703	13.69
144	Billings, MT-WY	347,514	441,859	79%	5375	5062	4.89
46	Hickory-Morganton, NC-TN	425,021	548,060	78%	2742	2646	131.9

EA	EA Name	Subscribers	2008 Estimated EA Population	2008 Penetration Rate	2008 HHI	2007 HHI	EA Density
48	Charleston, WV-KY-OH	924,959	1,178,626	78%	3442	2999	85.35
52	Wheeling, WV-OH	238,554	306,292	78%	4538	4436	124.54
62	Grand Rapids-Muskegon-Holland, MI	1,521,485	1,961,947	78%	2935	2709	206.76
65	Elkhart-Goshen, IN-MI	743,583	955,560	78%	2571	2332	185.73
129	San Angelo, TX	161,249	206,905	78%	2237	2464	10.05
166	Eugene-Springfield, OR-CA	664,561	847,451	78%	2322	1850	43.1
4	Burlington, VT-NY	478,471	620,023	77%	8263	4776	57.62
14	Salisbury, MD-DE-VA	313,773	409,070	77%	5507	5263	111.17
16	Staunton, VA-WV	271,405	350,536	77%	2881	2093	50.99
47	Lexington, KY-TN-VA-WV	1,473,102	1,921,072	77%	3807	3683	80.39
61	Traverse City, MI	230,588	300,465	77%	2882	4178	50.67
104	Madison, WI-IA-IL	774,390	1,002,884	77%	3442	3530	71.33
117	Sioux City, IA-NE-SD	192,264	248,114	77%	4240	4025	39.51
148	Idaho Falls, ID-WY	271,012	350,332	77%	4361	2388	10.85
149	Twin Falls, ID	135,160	176,400	77%	4175	2232	14.08
165	Redding, CA-OR	279,110	361,915	77%	2888	2273	14.36
1	Bangor, ME	408,137	533,602	76%	4250	4365	20.94
116	Sioux Falls, SD-IA-MN-NE	420,355	554,970	76%	5179	4288	15.11
162	Fresno, CA	1,233,651	1,633,280	76%	2962	2932	98.64
92	Fayetteville-Springdale-Rogers, AR-MO-OK	378,621	506,212	75%	4729	4629	88.43
113	Fargo-Moorhead, ND-MN	288,111	384,153	75%	4313	3286	16.4
115	Rapid City, SD-MT-ND-NE	165,888	224,401	74%	5140	4952	5.04
54	Erie, PA	371,032	509,551	73%	4241	4120	116.41
168	Pendleton, OR-WA	144,625	204,130	71%	2894	2150	8.67
76	Greenville, MS	158,768	226,125	70%	3575	3491	40.96
145	Great Falls, MT	112,542	163,194	69%	4910	4685	4.23
105	La Crosse, WI-MN	170,756	252,006	68%	3823	3815	53.67
58	Northern Michigan, MI	*	267,688	*	4261	4270	28.53
74	Huntsville, AL-TN (see note 2)	*	1,066,914	*	2550	*	119.14
109	Duluth-Superior, MN-WI	*	348,380	*	4107	3504	18.53
110	Grand Forks, ND-MN	*	220,264	*	4755	3848	10.16
112	Bismarck, ND-MT-SD	*	179,144	*	5015	4891	6.26
114	Aberdeen, SD	*	77,619	*	5000	4983	5.39
146	Missoula, MT	*	436,309	*	6327	6043	10.79

\*Data withheld to maintain firm confidentiality.

Source: Federal Communications Commission internal analysis based on year-end 2008 filings for Numbering Resource Utilization in the United States. Density is persons per square mile. EA populations are based on Census estimates as of July 1, 2008.

Note 1: As discussed in the *Twelfth Report*, the penetration rate in EA83 (New Orleans) appears to be an aberration. That EA lost over 260,000 people between 2000 and 2006, while its subscriber count remained relatively unchanged, creating a large increase in its penetration rate. One explanation for this may be that, after the flooding, people leaving the area took their cell phones (and cell phone numbers) with them. Thus, those numbers may still be associated with New Orleans rate centers, even though the people actually no longer live anywhere near there.

Note 2: We believe there was a discrepancy in the data for this EA, making the subscriber data and HHI for this market unreliable.

**Table C-4: Top 16 Mobile Wireless Operators by Subscribers**  
(with publicly-available subscriber counts, in thousands)

Year-End 2007		Year-End 2008	
Operator	Total	Operator	Total
1 AT&T (1)	70,052	AT&T (1)	77,009
2 Verizon Wireless (1)	65,707	Verizon Wireless (1)	72,056
3 Sprint Nextel (1)	53,003	Sprint Nextel (1)	48,338
4 T-Mobile	28,685	T-Mobile (1)	32,758
5 Alltel (1, 2)	13,400	Alltel (1, 2)	13,219
6 US Cellular (1)	6,122	US Cellular (1)	6,196
7 MetroPCS	3,963	MetroPCS	5,367
8 Leap	2,864	Leap	3,845
9 Centennial	1,093	Centennial (3)	1,100
10 América Móvil / Claro (4)	3,496	América Móvil / Claro (4)	4,809
11 Cellular South (6)	700	Cellular South (6)	800
12 iPCS	630	iPCS (5)	691
13 Cincinnati Bell Wireless	571	Cincinnati Bell Wireless	551
14 Clearwire	394	Clearwire	475
15 Ntelos	407	Ntelos	435
16 Pocket Comm. (7)	200	Pocket Comm.	300

Sources: For 2007, see *Thirteenth Report*, Table A-4 at xxxx. Some numbers in 2007 were adjusted or corrected as noted below. For 2008, publicly-available company documents such as operators' news releases and SEC filings. Subscriber information for privately-held companies is taken from news reports, as noted below.

Notes:

- (1) For 2008, AT&T number includes 60,098 (in thousands) postpaid and 16,911 prepaid customers. Verizon number includes 70,021 retail customers and 2,035 wholesale customers. SprintNextel number includes 36,678 direct post-paid customers and 3,597 direct pre-paid customers (Boost subscribers), 8,063 wholesale subscribers, but not 927 affiliated company subscribers. (SprintNextel number in 2007 was correctly due to a mistake in the *Thirteenth Report*.) T-Mobile number includes 26,806 postpaid and 5,952 prepaid customers. Alltel includes 12,813 retail customers and 406 wholesale customers derived from Verizon's pro forma numbers. US Cellular number includes 5,420 postpaid, 287 prepaid, and 489 wholesale customers. Cincinnati Bell includes 404 postpaid and 147 prepaid subscribers.
- (2) On January 5, 2009, Verizon Wireless completed its acquisition of Alltel. Alltel number in 2007 is substituted by its number in the first quarter of 2008. Alltel numbers are derived from Verizon's pro forma numbers.
- (3) On November 6, 2009, AT&T completed its acquisition of Centennial with estimated 1.1 million subscribers.
- (4) This includes Claro subscribers in Dominican Republic, Puerto Rico and Jamaica. No separated subscriber counts were reported. The number for 2007 was adjusted accordingly from the *Thirteenth Report*. Tracfone's subscriber counts were not included.
- (5) On October 19, 2009, SprintNextel announced it is acquiring its wireless affiliate iPCS.
- (6) For 2008 subscriber counts, see *TRDaily*, January 20, 2010; for 2007 subscriber counts, see <http://memphis.bizjournals.com/memphis/stories/2007/12/10/daily7.html>.
- (7) Pocket Communications subscriber count in 2007 was corrected from 175 to 200.

Table C-5: Selected Smartphone Launches in 2008-2009

<u>Smartphone</u>	<u>Date Launched</u>	<u>Wireless Service Provider(s)</u>	<u>Offered Exclusively at Launch?</u> <sup>1</sup>	<u>Handset Manufacturer</u>	<u>Platform/ Operating System</u>
BlackBerry 8820 <sup>2</sup>	Mar. 2008	AT&T T-Mobile Cellular One	No	RIM	BlackBerry
BlackBerry Pearl 8120 <sup>3</sup>	Apr. 2008	AT&T T-Mobile Corr	No	RIM	BlackBerry
BlackBerry Curve 8330 <sup>4</sup>	Apr. 2008	Sprint Nextel Verizon Wireless ACS Alltel Appalachian Bluegrass Boost Carolina West Cbeyond Cellcom Cellular One (Montana) Cellular South Closecall Credo Mobile Metro PCS nTelos Pioneer US Cellular	No	RIM	BlackBerry
BlackBerry Pearl 8110 <sup>5</sup>	Apr. 2008	AT&T Cellular One of NEPA Long Lines Viaero West Central	No	RIM	BlackBerry

<sup>1</sup> Based on reviewing company websites and press releases.

<sup>2</sup> *T-Mobile USA Launches Blackberry 8820*, Press Release, RIM, Mar. 24, 2008, available at <http://press.rim.com/release.jsp?id=1478>). U.S. providers carrying the 8820 listed on BlackBerry's page for the device at <http://na.blackberry.com/eng/devices/blackberry8800>.

<sup>3</sup> *T-Mobile and RIM Announce the BlackBerry Pearl 8120*, Press Release, RIM, Apr. 1, 2008, available at <http://press.rim.com/release.jsp?id=1484>). U.S. providers carrying the Pearl 8120 listed on RIM's page for the device at <http://na.blackberry.com/eng/devices/blackberrypearl8100>.

<sup>4</sup> *Sprint Bolsters Industry-Leading BlackBerry Portfolio with Addition of the BlackBerry Curve 8330*, Press Release, RIM, Apr. 1, 2008, available at <http://press.rim.com/release.jsp?id=1494>). U.S. providers carrying the Curve 8330 listed on RIM's page for the device at <http://na.blackberry.com/eng/devices/blackberrycurve8300>.

<sup>5</sup> *AT&T Launches the GPS-Enabled BlackBerry Pearl 8110 Smartphone*, Press Release, RIM, Apr. 23, 2008, available at <http://press.rim.com/release.jsp?id=1522>). U.S. providers carrying the Pearl 8110 listed on RIM's page for the device at <http://na.blackberry.com/eng/devices/blackberrypearl8100>.

<u>Smartphone</u>	<u>Date Launched</u>	<u>Wireless Service Provider(s)</u>	<u>Offered Exclusively at Launch?</u> <sup>1</sup>	<u>Handset Manufacturer</u>	<u>Platform/ Operating System</u>
XV6900 <sup>6</sup>	Apr. 2008	Verizon Wireless	Yes; phone is no longer available from provider	HTC	Windows Mobile 6 Professional
N78 <sup>7</sup>	June 2008	Unlocked	No	Nokia	Symbian OS 9.3, S60 rel. 3.2
iPhone 3G <sup>8</sup>	July 2008	AT&T	Yes	Apple	iPhone OS
Treo 800w <sup>9</sup>	July 2008	Sprint Nextel	Yes; phone is no longer available from carrier	Palm	Windows Mobile 6.1 Professional
E71 <sup>10</sup>	July 2008	Unlocked	No	Nokia	Symbian OS 9.2, S60 rel. 3.1 UI
Q Global <sup>11</sup>	Aug. 2008	AT&T	Yes	Motorola	Windows Mobile 6.1
Treo Pro <sup>12</sup>	Sept. 2008	Unlocked Sprint Nextel Alltel	No	Palm	Windows Mobile 6.1

<sup>6</sup> Verizon Wireless Unveils Stylish, Intuitive XV6900 For Mobile Professionals, Press Release, Verizon Wireless, Mar. 31, 2008, available at <http://news.vzw.com/news/2008/03/pr2008-03-28k.html>. Product no longer available through Verizon Wireless website, but HTC's page for the device at <http://www.htc.com/us/products/verizon-xv6900> indicates that, when the device was available, it was available exclusively from Verizon Wireless.

<sup>7</sup> A Perfect Fusion Of Features And Services – The Nokia N78 Now Available In US, Press Release, Nokia, June 24, 2008, available at <http://www.nokia.com/press/press-releases/showpressrelease?newsid=1230590>.

<sup>8</sup> AT&T to Offer Next-Generation iPhone on Its High-Performance 3G Network, Press Release, AT&T, June 9, 2008, available at <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=25791&mapcode>. Press release indicates U.S. exclusivity through AT&T.

<sup>9</sup> Palm and Sprint Introduce the 800w Smartphone, Press Release, Palm, July 14, 2008, available at <http://investor.palm.com/releasedetail.cfm?ReleaseID=321781>). Press release indicates exclusive Sprint content, but product no longer available through Palm or Sprint.

<sup>10</sup> Nokia E71 makes its US debut at the Nokia Flagship Store in New York, Press Release, Nokia, July 29, 2008, available at <http://www.nokia.com/press/press-releases/showpressrelease?newsid=1238972>.

<sup>11</sup> MOTO Q Global with Windows Mobile 6.1 Now Available from AT&T, Press Release, Motorola, Sep. 2, 2008, available at <http://mediacenter.motorola.com/content/detail.aspx?ReleaseID=5862&NewsAreaId=2>). Press release indicates U.S. exclusivity through AT&T.

<sup>12</sup> Treo Pro by Palm, Now Available, Offers True End-to-End Enterprise Solution, Press Release, Palm, Sep. 26, 2008, available at <http://investor.palm.com/releasedetail.cfm?ReleaseID=337019>. The Treo Pro was initially available unlocked from Palm directly. Subsequently, Alltel began offering the device in March 2009. See Alltel Wireless Now Offers Treo Pro Smartphone by Palm, Press Release, Palm, Mar. 5, 2009, available at <http://investor.palm.com/releasedetail.cfm?ReleaseID=369034>). Later in March, 2009, Sprint also began offering the Treo Pro on its network. See Sprint and Palm Announce Upcoming Availability of Treo Pro on America's Most Dependable 3G Network, Press Release, Palm, Mar. 4, 2009, available at <http://investor.palm.com/releasedetail.cfm?ReleaseID=368795>.

<u>Smartphone</u>	<u>Date Launched</u>	<u>Wireless Service Provider(s)</u>	<u>Offered Exclusively at Launch?</u> <sup>1</sup>	<u>Handset Manufacturer</u>	<u>Platform/ Operating System</u>
BlackBerry Pearl Flip 8220 <sup>13</sup>	Oct. 2008	T-Mobile Cellular One (Montana) Iowa Wireless Viaero West Central	No	RIM	BlackBerry
Epix <sup>14</sup>	Oct. 2008	AT&T	Yes	Samsung	Windows Mobile 6.1
G1 <sup>15</sup>	Oct. 2008	T-Mobile	Yes	HTC	Google Android
Touch Pro <sup>16</sup>	Oct. 2008	Sprint Nextel Verizon Wireless Alltel US Cellular	No; phone is no longer available from providers	HTC	Windows Mobile 6.1 Professional
N96 <sup>17</sup>	Nov. 2008	Unlocked	No	Nokia	Symbian OS 9.3, S60 rel. 3.2
BlackBerry Bold 9000 <sup>18</sup>	Nov. 2008	AT&T	Yes	RIM	BlackBerry
Fuze <sup>19</sup>	Nov. 2008	AT&T	Yes; phone is no longer available from provider	HTC	Windows Mobile 6.1
Incite <sup>20</sup>	Nov. 2008	AT&T	Yes	LG	Windows Mobile 6.1

<sup>13</sup> *T-Mobile USA Launches First BlackBerry Flip Phone*, Press Release, RIM, Oct. 13, 2008, available at <http://press.rim.com/release.jsp?id=1837>). U.S. wireless service providers carrying the Pearl Flip 8220 listed on RIM's page for the device at <http://na.blackberry.com/eng/devices/blackberrypearl8200>.

<sup>14</sup> *AT&T Introduces Samsung Epix, the First Smartphone with Built-In Optical Mouse*, Press Release, AT&T, Oct. 21, 2008, available at <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26222&mapcode>). Press release indicates U.S. exclusivity through AT&T.

<sup>15</sup> *T-Mobile Unveils the T-Mobile G1 – the First Phone Powered by Android*, Press Release, T-Mobile, Sep. 23, 2008, available at [http://www.t-mobile.com/company/PressReleases\\_Article.aspx?assetName=Prs\\_Prs\\_20080923&title=T-Mobile%20Unveils%20the%20T-Mobile%20G1%20-%20the%20First%20Phone%20Powered%20by%20Android](http://www.t-mobile.com/company/PressReleases_Article.aspx?assetName=Prs_Prs_20080923&title=T-Mobile%20Unveils%20the%20T-Mobile%20G1%20-%20the%20First%20Phone%20Powered%20by%20Android)). Press release indicates U.S. exclusivity through T-Mobile.

<sup>16</sup> *Sprint Introduces the Highly Anticipated HTC Touch Pro*, Press Release, Sprint Nextel, Oct. 24, 2008, available at [http://newsreleases.sprint.com/phoenix.zhtml?c=127149&p=irol-newsArticle\\_newsroom&ID=1217060&highlight=touch%20pro](http://newsreleases.sprint.com/phoenix.zhtml?c=127149&p=irol-newsArticle_newsroom&ID=1217060&highlight=touch%20pro)). The HTC Touch Pro is no longer available for purchase from the providers' websites.

<sup>17</sup> *Enticing Entertainment – the Nokia N96*, Press Release, Nokia, Nov. 3, 2008, available at <http://www.nokia.com/press/press-releases/showpressrelease?newsid=1265787>).

<sup>18</sup> *AT&T Customers to Enter a 'Bold' New Wireless World*, Press Release, RIM, Oct. 22, 2008, available at <http://press.rim.com/release.jsp?id=1887>. Press release indicates U.S. exclusivity through AT&T.

<sup>19</sup> *HTC FUZE From AT&T Fuses Fun and Function with the One-Touch Power of TouchFLO 3D*, Press Release, AT&T, Nov. 11, 2008, available at <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26299&mapcode>). The HTC FUZE is no longer available for purchase through AT&T's website.

<sup>20</sup> *AT&T Debuts LG Incite Global 3G Smartphone*, Press Release, AT&T, Nov. 18, 2008, available at <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26322&mapcode>). Press release indicates U.S. exclusivity through AT&T.

<u>Smartphone</u>	<u>Date Launched</u>	<u>Wireless Service Provider(s)</u>	<u>Offered Exclusively at Launch?</u> <sup>1</sup>	<u>Handset Manufacturer</u>	<u>Platform/ Operating System</u>
BlackBerry Storm <sup>21</sup>	Nov. 2008	Verizon Wireless	Yes	RIM	BlackBerry
Omnia <sup>22</sup>	Nov. 2008	Verizon Wireless	Yes	Samsung	Windows Mobile 6.1 Professional
XPERIA X1 <sup>23</sup>	Nov. 2008	Unlocked	No; phone is no longer available through manufacturer	Sony Ericsson	Windows Mobile 6.1
N79 <sup>24</sup>	Dec. 2008	Unlocked	No	Nokia	Symbian OS 9.3, S60 v. 3.2 UI
N85 <sup>25</sup>	Dec. 2008	Unlocked	No	Nokia	Symbian OS 9.3, S60 rel. 3.2
BlackBerry Curve 8350i <sup>26</sup>	Dec. 2008	Sprint Nextel SouthernLINC	No	RIM	BlackBerry
E63 <sup>27</sup>	Jan. 2009	Unlocked	No	Nokia	Symbian OS 9.2, S60 v. 3.1 UI
5800 Xpress Music <sup>28</sup>	Feb. 2009	Unlocked	No	Nokia	Symbian OS 9.4, S60 rel. 5

<sup>21</sup> *Customers Across the Country Line Up As BlackBerry Storm Blows Into Verizon Wireless Communications Stores*, Press Release, Verizon Wireless, Nov. 21, 2008, available at <http://news.vzw.com/news/2008/11/pr2008-11-21b.html>). Press release indicates U.S. exclusivity through Verizon Wireless.

<sup>22</sup> *Verizon Wireless Adds Samsung Omnia™ To Its Touch Screen Lineup*, Press Release, Verizon Wireless, Nov. 25, 2008, available at <http://news.vzw.com/news/2008/11/pr2008-11-25a.html>). U.S. exclusivity through Verizon Wireless indicated by Samsung's website identifying the Omnia as a Verizon Wireless device at [http://www.samsung.com/us/consumer/mobile/mobile-phones/verizon-wireless-phones/SCH-I910ZKAVZW/index.idx?pagetype=prd\\_detail](http://www.samsung.com/us/consumer/mobile/mobile-phones/verizon-wireless-phones/SCH-I910ZKAVZW/index.idx?pagetype=prd_detail).

<sup>23</sup> Darren Murph, *Sony Ericsson XPERIA X1 makes date with US: Black Friday for \$799.99*, ENGADGET, Nov. 12, 2008, at <http://www.engadget.com/2008/11/12/sony-ericsson-xperia-x1-makes-date-with-us-black-friday-for-79/>). The XPERIA X1 is no longer available for purchase from Sony Ericsson's website.

<sup>24</sup> *Give the gift of beauty and entertainment for the holidays – the Nokia N85 and Nokia N79*, Press Release, Nokia Dec. 15, 2008, available at <http://www.nokia.com/press/press-releases/showpressrelease?newsid=1277593>.

<sup>25</sup> *Id.*

<sup>26</sup> *Sprint Launches BlackBerry Curve 8350i for Customers Wanting the Most Advanced Push-to-Talk BlackBerry Smartphone Ever*, Press Release, RIM, Dec. 15, 2008, available at <http://press.rim.com/release.jsp?id=1931>). U.S. providers carrying the Curve 8350i listed on RIM's page for the device at <http://na.blackberry.com/eng/devices/blackberrycurve8300>.

<sup>27</sup> *Messaging made simple – the Nokia E63 heads to the United States*, Press Release, Nokia, Jan. 7, 2009, available at <http://www.nokia.com/press/press-releases/showpressrelease?newsid=1280903>.

<sup>28</sup> *Nokia 5800 XpressMusic hits shelves in the United States*, Press Release, Nokia, Feb. 27, 2009, available at <http://www.nokia.com/press/press-releases/archive/archiveshowpressrelease?newsid=1293991>.

<u>Smartphone</u>	<u>Date Launched</u>	<u>Wireless Service Provider(s)</u>	<u>Offered Exclusively at Launch?<sup>1</sup></u>	<u>Handset Manufacturer</u>	<u>Platform/ Operating System</u>
BlackBerry Curve 8900 <sup>29</sup>	Feb. 2009	AT&T T-Mobile Cellular One (Montana) Cellular One of East Texas Corr Long Lines MTPCS/Cellular One/Chinook Viaero West Central	No	RIM	BlackBerry
E75 <sup>30</sup>	Apr. 2009	Unlocked	No	Nokia	Symbian OS 9.3, S60 rel. 3.2
Propel Pro <sup>31</sup>	Apr. 2009	AT&T	Yes	Samsung	Windows Mobile 6.1
Nokia E71x <sup>32</sup>	May 2009	AT&T	Yes	Nokia	Symbian OS 9.2, S60 rel. 3.1 UI
Jack <sup>33</sup>	May 2009	AT&T	Yes	Samsung	Windows Mobile 6.1
Pre <sup>34</sup>	June 2009	Sprint Nextel Verizon Wireless	No	Palm	Palm OS
iPhone 3G S <sup>35</sup>	June 2009	AT&T	Yes	Apple	iPhone OS

<sup>29</sup> *T-Mobile USA to Offer Customers the Thinnest and Lightest Full-QWERTY BlackBerry Smartphone*, Press Release, RIM, Jan. 7, 2009, available at <http://press.rim.com/release.jsp?id=1984>. U.S. providers carrying the Curve 8900 listed on RIM's page for the device at [http://na.blackberry.com/eng/devices/blackberrycurve8900/curve\\_wherebuy.jsp](http://na.blackberry.com/eng/devices/blackberrycurve8900/curve_wherebuy.jsp).

<sup>30</sup> *Email the way you want it – Nokia E75 begins shipping*, Press Release, Nokia Apr. 6, 2009, available at <http://www.nokia.com/press/press-releases/showpressrelease?newsid=1303620>.

<sup>31</sup> *AT&T Unveils New Integrated Devices for Texting, Email and More*, Press Release, AT&T, Mar. 30, 2009, available at <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26664>. U.S. exclusivity through AT&T indicated by Samsung's website at [http://www.samsung.com/us/consumer/mobile/mobile-phones/at-t-phones/SGH-I627MAAATT/index.idx?pagetype=prd\\_detail](http://www.samsung.com/us/consumer/mobile/mobile-phones/at-t-phones/SGH-I627MAAATT/index.idx?pagetype=prd_detail) (identifying the Propel Pro as an AT&T device).

<sup>32</sup> *Nokia E71x with AT&T in stores across the U.S. today*, Press Release, Nokia, May 4, 2009, available at <http://www.nokia.com/press/press-releases/showpressrelease?newsid=1310666>. Exclusivity indicated by AT&T's page for the device at <http://www.wireless.att.com/businesscenter/NokiaE71x/index.jsp>.

<sup>33</sup> *AT&T Completes Its Full House of Smart Devices with the New Samsung Jack*, Press Release, AT&T, May 14, 2009, available at <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26818&mapcode> (indicates exclusivity).

<sup>34</sup> Charlie Sorrel, *It's Official: Palm Pre to Launch June 6<sup>th</sup> for \$300*, Gadget Lab Blog, WIRED, May 19, 2009, at <http://www.wired.com/gadgetlab/2009/05/boom-palm-pre-to-launch-june-6th-300>.

<sup>35</sup> *iPhone 3G S Available at AT&T Tomorrow*, Press Release, AT&T, June 18, 2009, available at <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=26868&mapcode>. U.S. exclusivity with AT&T of the iPhone 3G S indicated in the fine print/footnote on Apple's iPhone purchase page at <http://www.apple.com/iphone/buy>.

<u>Smartphone</u>	<u>Date Launched</u>	<u>Wireless Service Provider(s)</u>	<u>Offered Exclusively at Launch?</u> <sup>1</sup>	<u>Handset Manufacturer</u>	<u>Platform/ Operating System</u>
BlackBerry Pearl Flip 8230 <sup>36</sup>	June 2009	Verizon Wireless ACS Alltel Appalachian Bluegrass Carolina West Cellcom Cellular One of NEPA Cellular South Inland Nex-Tech/United nTelos Panhandle/PTCI US Cellular	No	RIM	BlackBerry
Snap <sup>37</sup>	June 2009	Sprint Nextel US Cellular	No	HTC	Windows Mobile 6.1
Ozone <sup>38</sup>	June 2009	Verizon Wireless	Yes	HTC	Windows Mobile 6.1
N97 <sup>39</sup>	June 2009	Unlocked	No	Nokia	Symbian OS 9.4, S60 rel. 5
N86 <sup>40</sup>	July 2009	Unlocked	No	Nokia	Symbian OS 9.3, S60 rel. 3.2
Dash 3G <sup>41</sup>	July 2009	T-Mobile	Yes	HTC	Windows Mobile 6.1

<sup>36</sup> *Verizon Wireless Customers Will Flip For The New 3G-Enabled BlackBerry Pearl Flip Smartphone*, Press Release, RIM, June 4, 2009, available at <http://press.rim.com/release.jsp?id=2345>. U.S. providers carrying the Pearl Flip 8230 listed on RIM's page for the device at <http://na.blackberry.com/eng/devices/blackberrypearl8200>.

<sup>37</sup> *Sprint Strengthens Social Network Connections with Customers*, Press Release, Sprint Nextel, June 22, 2009, available at [http://newsreleases.sprint.com/phoenix.zhtml?c=127149&p=irol-newsArticle\\_newsroom&ID=1300933&highlight](http://newsreleases.sprint.com/phoenix.zhtml?c=127149&p=irol-newsArticle_newsroom&ID=1300933&highlight)). US Cellular subsequently made the HTC Snap available on its network and for purchase on its website at <http://www.uscellular.com/uscellular/cell-phones/phoneDetailsPopup.jsp?IDparam=prod680004>.

<sup>38</sup> *HTC Ozone Brings Verizon Wireless' Smartphone Lineup to New Heights*, Press Release, Verizon Wireless June 25, 2009, available at <http://news.vzw.com/news/2009/06/pr2009-06-25.html>. Exclusivity indicated by Verizon Wireless's webpage at <http://www.verizonwireless.com/b2c/store/controller?item=phoneFirst&action=viewPhoneDetail&selectedPhoneId=4848&cmp=KNC-PaidSearch>.

<sup>39</sup> *Nokia N97 mobile computer to begin selling worldwide in June*, Press Release, Nokia, June 2, 2009, available at <http://www.nokia.com/press/press-releases/showpressrelease?newsid=1319081>.

<sup>40</sup> *The ultimate imaging device – the Nokia N86 8MP – coming to the United States*, Press Release, Nokia, July 17, 2009, available at <http://pressbulletinboard.nokia.com/2009/07/17/the-ultimate-imaging-device-%E2%80%93-the-nokia-n86-8mp-%E2%80%93-coming-to-the-united-states/>.

<sup>41</sup> *T-Mobile USA To Offer New 3G-Enabled Smartphone*, Press Release, T-Mobile, June 17, 2009, available at [http://www.t-mobile.com/company/PressReleases\\_Article.aspx?assetName=Prs\\_Prs\\_20090618&title=T-Mobile%20USA%20To%20Offer%20New%203G-Enabled%20Smartphone](http://www.t-mobile.com/company/PressReleases_Article.aspx?assetName=Prs_Prs_20090618&title=T-Mobile%20USA%20To%20Offer%20New%203G-Enabled%20Smartphone). T-Mobile's U.S. exclusivity indicated by name being "T-Mobile Dash 3G" and by the Dash 3G being a new generation of the T-Mobile Dash, which was exclusively available through T-Mobile. See *T-Mobile Unveils a New Full-Featured Smartphone, the T-Mobile Dash*, Press Release, T-Mobile, Oct. 11, 2006, available at [http://www.t-mobile.com/company/PressReleases\\_Article.aspx?assetName=Prs\\_Prs\\_20061011&title=T-Mobile%20Unveils%20a%20New%20Full-Featured%20Smartphone,%20the%20T-Mobile%20Dash](http://www.t-mobile.com/company/PressReleases_Article.aspx?assetName=Prs_Prs_20061011&title=T-Mobile%20Unveils%20a%20New%20Full-Featured%20Smartphone,%20the%20T-Mobile%20Dash).